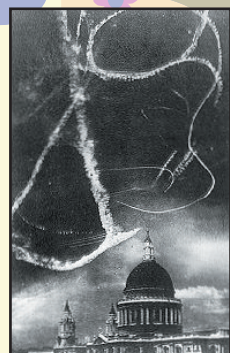


# NASA STEMS

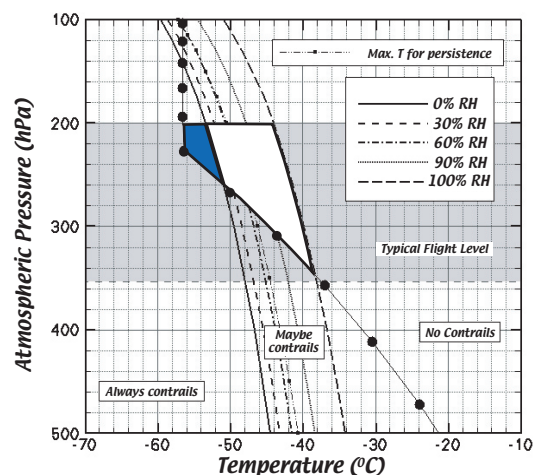
NASA Science Trivia to Excite & Motivate Students

By now it's not a mystery that scientists are studying contrails. But did you know that contrails were first noticed during high-altitude flights in the 1920's? However, interest in contrails really blossomed during WWII



when bombers could be sighted from miles away. In fact, numerous WWII veteran accounts tell of problems to aviation due to massive contrail formations. Planes could not find their targets, and sometimes collided with each other. The picture to the left depicts one of the oldest contrail photos. It was taken during dogfights over London's St. Paul's Cathedral during the Battle of Britain in 1919.

## Contrail Prediction Activity: The Appleman Chart



■ Definitely contrails □ Maybe contrails

In 1953, a scientist named H. Appleman published a chart that can be used to determine when a jet airplane would or would not produce a contrail. Appleman showed that when the air outside of the airplane is cold enough and moist enough, the mixture of the jet exhaust and the air would form a cloud.

<http://asd-www.larc.nasa.gov/GLOBE/resources/activities/>

# CONTRAIL EDUCATION



<http://asd-www.larc.nasa.gov/GLOBE/>

+ Importance

+ Science

+ History of Contrails

+ Satellite Imagery

+ Reporting Instructions

+ Resources

+ Contrail Gallery

+ FAQ

+ Team Page

+ Glossary

Visit the most complete contrail website supported by NASA's leading atmospheric scientists. Find answers to many questions currently being investigated.

**Importance:** Contrails, especially persistent contrails, represent a human-caused increase in the Earth's cloudiness, and are likely to be affecting climate and ultimately our natural resources.

**Science:** What are contrails? Are there different types of contrails? How are contrails different from other clouds? Can contrails move, or do they stay in the location where they were formed?

**History:** When were the earliest contrails observed? When did scientists learn how contrails formed?

**Satellite Imagery:** Can contrails be seen from space? How do scientists use satellite imagery to study contrails? View some satellite images of contrails.

**Resources:** Lesson plans, Quick Ideas, Activities, Presentations, Websites and Contrail ID Chart.

**Contrail Gallery:** View a collection of contrail photographs with explanations.

**FAQ:** Find out what questions folks from around the world are asking and what the scientists are replying.

**Glossary:** A great source for terminology related to the study of atmospheric sciences.